Case 2987

Geopeltis Regteren Altena, 1949, *Geoteuthis* Münster, 1843, *Jeletzkyteuthis* Doyle, 1990, *Loligosepia* Quenstedt, 1839, *Parabelopeltis* Naef, 1921, *Paraplesioteuthis* Naef, 1921 and *Belemnoteuthis montefiorei* Buckman, 1880 (Mollusca, Coleoidea): proposed conservation

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Abstract. The purpose of this application is to conserve the names of six genera and one species of Jurassic coleoid cephalopods. The six generic names are threatened by the generic name *Belemnosepia*, a name first used by Agassiz in 1835 but made available by Buckland & Agassiz in 1836. The first person to refer species to *Belemnosepia* was d'Orbigny (1846), and six of these are now the type species of *Geopeltis* Regteren Altena, 1949, *Geoteuthis* Münster, 1843, *Jeletzkyteuthis* Doyle, 1990, *Loligosepia* Quenstedt, 1839, *Parabelopeltis* Naef, 1921 and *Paraplesioteuthis* Naef, 1921. The name *Belemnosepia* has not been used for over 60 years, and in the 19th century was used in senses different from the original; it is proposed that this name should be suppressed. It is also proposed that the specific name of *Belemnoteuthis montefiorei* Buckman, 1880 should be conserved by suppression of its senior synonym *Orthoceras belemnitoeides* Buckland, 1830.

Keywords. Nomenclature; taxonomy; Cephalopoda; Coleoidea; Jurassic; *Belemnosepia*; *Geopeltis*; *Geoteuthis*; *Jeletzkyteuthis*; *Loligosepia*; *Parabelopeltis*; *Paraplesioteuthis*; *Belemnoteuthis montefiorei*.

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1. The generic name *Belemnosepia* appears in the literature with various authors and publication dates. These are: Agassiz (1835) — given as author in d'Orbigny (1846), Gray (1849), Bronn & Roemer (1851–52), Giebel (1852a, 1852b) and Chénu (1859); Buckland & Agassiz (1835 and 1836) — given as authors in Geinitz (1846) and Fischer (1882); Agassiz in Buckland (1839) — given as author in Agassiz (1846) and Bronn (1848); Buckland (1835 and 1836) — given as author in Naef (1921b) and Neave (1939).

2. We shall first elucidate the history, authorship and date of publication of *Belemnosepia*. Agassiz (1835) stated that, following a visit to the Philpot Collection at Lyme Regis, England, he had made an important discovery regarding belemnites, namely that the 'sogenannte *Onychoteuthis prisca* mit Dintensäcken' [the so-called

Onychoteuthis prisca with ink sacs] of Zieten (1832, pl. 25) was really only the anterior part of a belemnite. In point of fact, the name *Onychoteuthis prisca* was not used for these fossils by Zieten. Agassiz was referring to *Onychoteuthis prisca* Münster, 1828. However, the reference to Zieten (pl. 25) shows that he was confusing fossil gladiuses with the pro-ostraca of belemnoid cephalopods. He then wrote: 'Die Belemniten unterscheiden sich daher von den Sepien hauptsächlich durch die auffallend grössere Entwicklung des Spitzchens am oberen Rande der sogenannten Sepien-Knochen' [The belemnites therefore differ from the sepiids chiefly through the strikingly greater development of the little spine at the upper margin of the so-called cuttlebone]. It was for this reason that he coined the name *Belemnosepia* for the fossils, although this name does not appear in his brief communication. However, he probably communicated the name *Belemnosepia* to Buckland during his visit to England in October 1834. Agassiz later (1846, p. 11) recorded *Belemnosepia* as 'Agassiz in Buckland, 1839', presumably referring to the German translation (Buckland, 1839) of Buckland (1836b) which he had edited. It is evident from the context that this name was applied by Agassiz to a supposed animal which combined the features of a belemnite with those of a different fossil. Thus Agassiz in 1835 initiated the confusion which is apparent in Buckland (1836b) published a year later. The name *Belemnosepia* (written 'Belemno-Sepia') first appears in a report of a talk given by Buckland at a convention of German naturalists and physicians held in Bonn in 1835 (Anon., 1835, p. 627). The original text reads 'Buckland hielt einen Vortrag über ein neues Genus von fossilen Cephalopoden, das er *Belemno-Sepia* genannt hat, und über die Dintensäcke, welche im Innern der Belemniten-Stacheln gefunden wurden' [Buckland gave a lecture about a new genus of fossil cephalopods that he called *Belemno-Sepia* and about ink sacs which have been found in the interior of the belemnite thorns]. No description or figure was given, nor an indication to such a description or figure, nor is a species name mentioned. The name is a nomen nudum. Later, a description was published by Buckland (1836a), although no figure was given and no species name mentioned. He wrote (p. 39): '... ein Geschlecht in der Klasse der Cephalopoden ..., für welches ich mit Agassiz den Namen *Belemnosepia* vorschlagen möchte' [... a genus in the class Cephalopoda ..., for which I would like to propose in concurrence with Agassiz the name *Belemnosepia*]. The phrase 'in concurrence with' makes it clear that it was Agassiz who had named the taxon and, under Article 50a of the Code, authorship is established as Buckland & Agassiz in Buckland (1836). From the description it is clear that Buckland (1836a) was referring to fossil remains from the Lower Liassic of the Dorset coast near Lyme Regis. He had earlier (1830a, p. 23) described these remains under the name *Orthoceras belemnitoeides*. A review of his paper was published later that year (Buckland, 1830b, p. 511) in which the name was spelt *belemnitoides*; this was an incorrect subsequent spelling and under Article 33c of the Code is unavailable. Buckman (1880, p. 141) later named these remains *Belemnoteuthis montefiorei*; these are the forms described as unnamed Phragmoteuthida by Donovan (1977, pp. 21–22). The name *Orthoceras belemnitoeides* Buckland, 1830 has not been used for very many years, and *Belemnoteuthis montefiorei* is currently used to refer to these remains (e.g. Rietschel, 1977, p. 124; Phillips, 1982, p. 72; Engeser & Clarke, 1988, p. 141; eight further references by five further authors are held by the Secretariat). We propose that the name *montefiorei* Buckman, 1880 be conserved by suppression of *Orthoceras*

belemnitoeides Buckland, 1830. Buckland (1836b, p. 374) mentioned the name *Belemnosepia* when describing fossil ink sacs of coleoids whose systematic position had not previously been clear. Plate 44' of this work bears the heading 'illustrations of the Genus *Belemnosepia*'; this includes figure 1 'Imaginary restoration of *Belemnosepia*' showing a belemnite rostrum. Plate 44'' is titled 'ink bags of *Belemnosepia* in their nacreous sheaths, from the Lias of Lyme Regis'. In the explanation of plate 44'', figs. 1 and 2 are stated to be 'anterior sheath and ink-bag of *Belemno-sepia*' and fig. 3 to be '*Belemno-sepia* from the Lias at Lyme, in the Oxford Museum; the ink-bag is preserved entire within the anterior conical sheath'. All the specimens on this plate are recognizable as *Belemnoteuthis montefiorei*.

3. However, Buckland confused the issue by referring also to two belemnite rostra which had been found associated with ink sacs (Buckland, 1836b, pl. 44', figs. 7, 9) named in the explanation of the plates (Buckland, 1836b, vol. 2, p. 69) as *Belemnites ovalis* and *B. pistilliformis*? respectively. It is now thought that *Belemnoteuthis montefiorei* and *Belemnites* belong to different orders, Phragmoteuthida and Belemnitida respectively. *Belemnites* was a valid generic name at that time although it has been suppressed in Opinion 1721 (1993).

4. For the arguments that follow it is necessary to note that Buckland (1836b) clearly distinguished between 'fossil pens of *Loligo* from the Lias of Lyme Regis' (pls. 28–30), which are fossils now referred to the genera *Geopeltis* and *Loligosepia*, and the fossil ink sacs and belemnite rostra which he included in *Belemnosepia*. *Belemnosepia*, as originally conceived by Agassiz and by Buckland, was based on a reconstruction of a fossil coleoid under the erroneous assumption that *Belemnites* (fossil coleoid cephalopods possessing a pro-ostracum, phragmocone and rostrum) was congeneric with other forms (i.e. *Belemnoteuthis montefiorei*) which did not possess a rostrum. Buckland (1836b, p. 374, footnote) wrote: 'Each of these specimens contains an ink bag within the anterior portion of the sheath of a perfect Belemnite; and we are henceforth enabled with certainty to refer all species of *Belemnites* to a family [genus in modern terminology] in the class of Cephalopods, for which I would, in concurrence with M. Agassiz propose the name *Belemno-sepia*'. It is clear from Buckland (1836a, p. 39, text quoted above) that Buckland intended to use *Belemnosepia* as a new generic name. Buckland implied that the taxon *Belemnosepia* was to include all ink-sac-bearing belemnites.

5. Buckland (1836a, 1836b) did not include any nominal species in the new genus *Belemnosepia*. In accordance with Article 67g(ii) of the Code the type species must be chosen from among the nominal species first referred to the genus by a subsequent author, even though the unnamed specimens in pl. 44'' of Buckland (1836b) are recognizable as *Belemnoteuthis montefiorei*. Species were first referred to *Belemnosepia* by d'Orbigny (1846, pp. 433–441) and were: *Loligo bollensis* Zieten, 1832 (recte Schübler in Zieten, 1832); *Geoteuthis lata* Münster, 1843; *G. sagittata* Münster, 1843; *G. orbignyana* Münster, 1843; *G. speciosa* Münster, 1843; *G. obconica* Münster, 1843; *G. hastata* Münster, 1843; *G. flexuosa* Münster, 1843 and *Teudopsis agassizii* Eudes-Deslongchamps, 1835. These species represent a number of taxa which are now placed in six different genera (see para. 6 below). They do not, however, include any species that had been placed in *Belemnites* or the fossils that were later named *Belemnoteuthis montefiorei*.

6. D'Orbigny (1850) restricted the use of the generic name *Belemnosepia* to *Geoteuthis lata* Münster, 1843, placing in *Belopeltis* Voltz, 1840 the eight other species which he had listed as *Belemnosepia* in 1846. However, the *Table alphabètique* (p. 24) of the same work maintained his earlier position, listing all nine species as *Belemnosepia*, and omitting *Belopeltis*. Gray (1849), Pictet (1854), Chénu (1859) and Keferstein (1862–66) also used the name in a much broader sense. Fischer (1882, p. 354) mentioned only 'plusieurs espèces du Lias supérieur du Würtemberg, du Calvados, de Lyme Regis: et de l'Oxfordien de Chippenham'. Naef (1921b, p. 47) accepted *Belemnosepia* and even proposed a new family BELEMNOSEPIIDAE (p. 47). On p. 143 he wrote: 'Belemnosepiidae (p. 47). Hierher Formen vom Typus des *Belopeltis simplex* Voltz (= *Geoteuthis lata* Münster = *Belemnosepia lata* Orb. etc.) ... [Belemnosepiidae. Here forms of the type of *Belopeltis simplex* Voltz (= *Geoteuthis lata* Münster = *Belemnosepia lata* Orb. etc.)]. According to Article 67 of the Code 'the term 'designation' in relation to fixation of a type species of a genus must be rigidly construed'. Since Naef used the plural (Formen = forms) this cannot be regarded as the fixation of a type species of *Belemnosepia*. He apparently wanted to include more species which looked like *Belopeltis simplex* Voltz, but he did not state that *Belopeltis simplex* Voltz is definitely the type species. Both generic and family names were discarded in a supplement (compare also Naef, 1922). In 1922 Naef described *Belemnosepia* and *Palaeosepia* Theodori, 1844 as 'unnötige Bezeichnungen für das angenommene Belemnitentier' [unnecessary designations for the supposed belemnite animal]. No type species has ever been validly designated for *Belemnosepia*. Six of the species attributed to *Belemnosepia* by d'Orbigny are type species or subjective synonyms of the type species of other genera, as follows:

Geopeltis Regteren Altena, 1949 (p. 56), type species by original designation *Belopeltis simplex* Voltz, 1840 (p. 23, pl. 2, fig. 1). *Geoteuthis lata* Münster, 1843 (p. 71) and *G. orbignyana* Münster, 1843 (p. 72) are widely regarded as junior subjective synonyms of the type species (see Engeser, 1988, p. 8).

Geoteuthis Münster, 1843 (p. 68), type species by subsequent designation by Bülow-Trummer (1920, p. 252) *Loligo bollensis* Schübler in Zieten, 1832 (p. 34). *Loligo bollensis* is widely regarded (see Engeser, 1988, p. 8) as a subjective synonym of *L. aalensis* and on this view *Geoteuthis* is a junior subjective synonym of *Loligosepia*.

Jeletzkyteuthis Doyle, 1990 (p. 198), type species by original designation *Teudopsis agassizii* Eudes-Deslongchamps, 1835 (p. 72). Doyle stated that his name *Jeletzkyteuthis* was a replacement name for *Loliginites* Quenstedt, 1849 (p. 497). However, the latter name was applied by Quenstedt to fossils which he believed to belong to the Recent genus *Loligo*; accordingly, it is available only for the purposes of homonymy (Article 20 of the Code) and cannot be replaced in the sense of Articles 13a(iii) and 67h. It should be noted that *T. agassizii* has been widely regarded as a senior synonym of *Loliginites coriaceus* Quenstedt, 1849 (p. 512), (e.g. by Engeser, 1988; Doyle, 1990), although Guérin-Franiatte & Gouspy (1993) regard *T. agassizii* as a nomen dubium.

Loligosepia Quenstedt, 1839 (p. 163), type species by subsequent designation by Regteren Altena (1949, p. 58) *Loligo aalensis* Schübler in Zieten, 1832, p. 34, a probable subjective synonym of *Loligo bollensis* Schübler in Zieten, 1832, p. 34 (see under *Geoteuthis* above).

Parabelopeltis Naef, 1921a (p. 534), type species by monotypy (p. 539) *Geoteuthis flexuosa* Münster, 1843 (p. 75).

Paraplesioteuthis Naef, 1921a (p. 534), type species by monotypy and original designation (p. 539) *Geoteuthis sagittata* Münster, 1843 (p. 72).

A type species designation for *Belemnosepia* of the type species of any of these six genera would invalidate a generic name which is in current use or which could be used by anyone dissenting from its synonymy with others. Designation of any of the other nominal species included by d'Orbigny (1846) would also cause confusion. The forthcoming Coleoidea volume of the *Treatise on Invertebrate Paleontology* will list as valid or potentially valid the six nominal genera *Geopeltis*, *Geoteuthis*, *Jeletzkyteuthis*, *Loligosepia*, *Parabelopeltis* and *Paraplesioteuthis*, although recognising that *Geoteuthis* and *Loligosepia* are generally recognized as subjective synonyms. However, the limited use of these names in recent years is inadequate to meet the criteria of Article 79c of the Code for a prima facie case that stability is threatened by the availability of *Belemnosepia*.

7. Probably the last author to use *Belemnosepia* as a valid name was Dreyfuss (1935) who, apparently unaware of Naef (1922), argued that *Belemnosepia* was the earliest available name for *Geoteuthis* Münster, 1843, which is a younger subjective synonym of *Loligosepia* Quenstedt, 1839 (see Doyle, Donovan & Nixon, 1994, p. 10). Jeletzky (1966) in a preliminary revision of fossil Coleoidea for the *Treatise on Invertebrate Paleontology* did not index the name *Belemnosepia*. No major systematic works (e.g. Wagner, 1860; Naef, 1922; Jeletzky, 1966; Engeser, 1988) have used the name *Belemnosepia* as valid. Riegraf (1995, p. 141) listed *Belemnosepia* as a subjective synonym of *Loligosepia* Quenstedt, 1839 and cited, with an asterisk indicating type species, '*B. lata* Graf zu Münster, 1837'. However, Münster (1837a, p. 252) did not mention this combination; in a brief report of a meeting he listed *Onychoteuthis* from the lithographic limestone of Eichstadt, including *O. lata*. He mentioned *Belemnosepia* only to remark that it was an association of belemnite rostra with *Onychoteuthis*. The same statement, slightly expanded, is found in Münster (1837b, col. 478) where it is made clear that he was referring to an accidental association of belemnites with *Onychoteuthis*. In both 1837 papers *O. lata* was a nomen nudum. Riegraf's citation is not a valid type species designation because the combination *Belemnosepia lata* did not exist and, if it was intended to refer to *O. lata*, this name was not then available.

8. Engeser (1988, pp. 8–9) described the problems detailed above and referred to *Belemnosepia* as a nomen dubium, suggesting that the Commission be asked for a ruling. Suppression of the name *Belemnosepia* is desirable for the following reasons:

(a) confusion surrounds the original proposal of *Belemnosepia*;

(b) it has been used by later authors in senses different from those of Buckland & Agassiz in Buckland (1836);

(c) it has not been used as a valid name in the last sixty years;

(d) the name has been rejected by major revisers;

(e) any eligible designation of a type species would displace a generic name in use or potentially valid.

9. The International Commission on Zoological Nomenclature is accordingly asked:

(1) to use its plenary powers to suppress the following names for the purposes of the Principle of Priority but not for those of the Principle of Homonymy:

(a) the generic name *Belemnosepia* Buckland & Agassiz in Buckland, 1836;
(b) the specific name *belemnitoeides* Buckland, 1830, as published in the binomen *Orthoceras belemnitoeides*;

(2) to place the following names on the Official List of Generic Names in Zoology:
(a) *Geopeltis* Regteren Altena, 1949 (gender: feminine), type species by original designation *Belopeltis simplex* Voltz, 1840;
(b) *Geoteuthis* Münster, 1843 (gender: feminine), type species by subsequent designation by Bülow-Trummer (1920) *Loligo bollensis* Schübler in Zieten, 1832;
(c) *Jeletzkyteuthis* Doyle, 1990 (gender: feminine), type species by original designation *Teudopsis agassizii* Eudes-Deslongchamps, 1835;
(d) *Loligosepia* Quenstedt, 1839 (gender: feminine), type species by subsequent designation by Regteren Altena (1949) *Loligo aalensis* Schübler in Zieten, 1832;
(e) *Parabelopeltis* Naef, 1921 (gender: feminine), type species by monotypy *Geoteuthis flexuosa*, Münster, 1843;
(f) *Paraplesioteuthis* Naef, 1921 (gender: feminine), type species by original designation and monotypy *Geoteuthis sagittata* Münster, 1843;

(3) to place the following names on the Official List of Specific Names in Zoology:
(a) *simplex* Voltz, 1840, as published in the binomen *Belopeltis simplex* (specific name of the type species of *Geopeltis* Regteren Altena, 1949);
(b) *bollensis* Schübler in Zieten, 1832, as published in the binomen *Loligo bollensis* (specific name of the type species of *Geoteuthis* Münster, 1843);
(c) *agassizii* Eudes-Deslongchamps, 1835, as published in the binomen *Teudopsis agassizii* (specific name of the type species of *Jeletzkyteuthis* Doyle, 1990);
(d) *aalensis* Schübler in Zieten, 1832, as published in the binomen *Loligo aalensis* (specific name of the type species of *Loligosepia* Quenstedt, 1839);
(e) *flexuosa* Münster, 1843, as published in the binomen *Geoteuthis flexuosa* (specific name of the type species of *Parabelopeltis* Naef, 1921);
(f) *sagittata* Münster, 1843, as published in the binomen *Geoteuthis sagittata* (specific name of the type species of *Paraplesioteuthis* Naef, 1921);
(g) *montefiorei* Buckman, 1880, as published in the binomen *Belemnoteuthis montefiorei*;

(4) to place on the Official Index of Rejected and Invalid Generic Names in Zoology the name *Belemnosepia* Buckland & Agassiz in Buckland, 1836, as suppressed in (1)(a) above;

(5) to place on the Official Index of Rejected and Invalid Specific Names in Zoology the name *belemnitoeides* Buckland, 1830, as published in the binomen *Orthoceras belemnitoeides* and as suppressed in (1)(b) above;

(6) to place on the Official Index of Rejected and Invalid Family-Group names in Zoology the name BELEMNOSEPIIDAE Naef, 1921 (invalid because the name of the type genus has been suppressed in (1)(a) above).

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